

12618A SYNCHRONOUS BOARD PHYSICAL DRIVER (DVR70)
(24307B - REV. 1446)

BINARY TAPE	24307-16009
SOURCE TAPES	24307-18059 24307-18060
SOURCE LISTING	24307-19005

PAGE 0001

0001

ASMB,L,C,B

** NO ERRORS*

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0001          ASMB,L,C,B
0003 00000    NAM DVR70,0,0
0004          ENT I,70,C,70
0005          ENT P,700,P,701,P,702,P,703
0006          ENT P,704,P,705,P,706,P,707
0007          EXT $PCOM,$TIME
0008*****
0009          12622A SYNCHRONOUS DATA SET (TRANSMIT)
0010*****
0011*
0012*          CONTROL WORD
0013*          BIT          MEANING
0014*          15          BIT 15 & 14 ON GENERATES
0015*          14          SUB-ADDRESS TO LOAD CONTROL WORD
0016*          13          =1 DATA TERMINAL READY (CD) TRUE
0017*          12          =0/RCV, =1/SEND/FORM & XMIT CHAR
0018*          11          =0 NO PARITY =1 AUTO PARITY
0019*          10          =0 EVEN PARITY =1 ODD PARITY
0020*          9           =0 SEND SYNC =1 DATA XMITTED
0021*          8           =1 ENABLE INTS IF CB,CC, LOST
0022*          7           TEST BIT
0023*          6,5,4       NOT USED
0024*          3,2,1,0     BYTE SIZE (1000)
0025*
0026*****
0027*
0028*          SYNCHRONIZATION CHARACTER
0029*          BIT          MEANING
0030*          15          BIT 15=0,14=1 GENERATES
0031*          14          SUB-ADDRESS TO LOAD SYNC
0032*          13,12,11,10,9,8 NOT USED
0033*          7,6,5,4,3,2,1,0 SYNC CHARACTER/7=PARITY
0034*
0035*****
0036*
0037*          DATA CHARACTER
0038*          BIT          MEANING
0039*          15          BIT 15=0,14=0 GENERATES SUB-
0040*          14          ADDRESS TO LOAD DATA CHAR
0041*          13,12,11,    NOT USED
0042*          10,9,8       NOT USED
0043*          7,6,5,4,    DATA CHARACTER WORD
0044*          3,2,1,0     BIT7 (MSB) PARITY BIT
0045*
0046*****
0047*
0048*          STATUS WORD
0049*          BIT          MEANING
0050*          15          15=1 NEW DATA
0051*          14          14=1 DATA SET TRANS DATA
0052*          13          13=1 DATA SET READY (CC) ON
0053*          12          12=1 RING INDICATOR (CF) ON
0054*          11          11=1 SECONDARY RCVD DATA (SBB) ON
0055*          10          10=1 SYNC CHARS BEING TRANS
0056*          9,8,7,6     NOT USED
0057*          5,4,3,2,1  NOT USED

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0058* 0 TEST BIT

0059*

0060*****

0061* 12621A SYNCHRONOUS DATA SET (RECEIVE)

0062*****

0063*

0064* CONTROL WORD

0065* BIT

MEANING

0066* 15 BIT 15 & 14 CN GENERATES A

0067* 14 SUB-ADDRESS TO LOAD CONTROL WORD

0068* 13 NOT USED

0069* 12 =1 DATA TERMINAL READY (CD) ON

0070* 11 =1 AUTOMATIC PARITY CHECK

0071* 10 =1 ODD PARITY

0072* 9 =1 HUNT FOR SYNC

0073* 8 =1 LOST(CC),(CF)

0074* 7 =1 SPECIAL CHARACTER LOGIC

0075* 6 =1 SECONDARY XMIT DATA (SBA) ON

0076* 5 TEST BIT

0077* 4 =1 SYNC CHARS PROCESSED

0078* 3,2,1,0 SPECIFIES BYTE SIZE (1000)

0079*

0080*****

0081*

0082* SPECIAL CHARACTER FORMAT

0083* BIT MEANING

0084* 15 BIT 15=0,14=0 GENERATES SUB-

0085* 14 ADDRESS TO LOAD DATA CHAR

0086* 13,12,11, NOT USED

0087* 10,9,8 NOT USED

0088* 7,6,5,4 DATA CHARACTER WORD

0089* 3,2,1,0 BIT7 (MSB) PARITY BIT

0090*

0091*****

0092*

0093* STATUS WORD

0094* BIT

MEANING

0095* 15 =1 NEW DATA IS READY

0096* 14 =1 ATTEMPTING TO GAIN SYNC R-60T

0097* 13 =1 DATA SET READY (CC) ON

0098* 12 =1 RX SIGNAL DETECTOR (CF) ON

0099* 11 =1 RING INDICATOR (CE) ON

0100* 10 TEST BIT

0101* 9 =1 SPECIAL CHAR MATCH

0102* 8 =1 PARITY ERROR OR TIMING ERROR

0103* 7,6,5,4 DATA CHARACTER WORD

0104* 3,2,1,0 BIT7 (MSB) PARITY BIT

0105*

0106*****

0107 00000 A EQU 0

0108 00001 B EQU 1

0109 00000 SC EQU 0

0110*****

0111*

0112* COMPLETION SECTION

0113*

0114	00000	C.70	EQU *	
0115	00000 000000		NOP	
0116	00001 002400		CLA	SUCCESSFUL COMPLETION
0117	00002 164220		LDB SEQ14,I	TRANSMISSION LOG
0118	00003 126000R		JMP C.70,I	RETURN
0119*				
0120	00004	P.700	EQU *	
0121	00004 000000		NOP	
0122	00005 103100		CLF 0	DISABLE INTERRUPTS
0123	00006 017227R		JSB SAVE	SAVE REGISTERS
0124	00007 062344R		LDA UEQT	ADDRESS USERS EQT
0125	00010 016364R		JSB SETQ	SET EQT
0126	00011 062354R		LDA USC	ADDRESS USERS SELECT CODE
0127	00012 017513R	PCOMM	JSB SETIO	SET I/O INSTRUCTIONS
0128	00013 017505R		JSB STAT	INPUT STATUS
0129	00014 067017R		LDB LSIT	
0130	00015 027000R		JMP LSWCH	LINE STATE
0131*				
0132*				
0133*				
0134	00016	P.701	EQU *	
0135	00016 000000		NOP	
0136	00017 103100		CLF 0	
0137	00020 017227R		JSB SAVE	
0138	00021 062345R		LDA UEQT+1	
0139	00022 016364R		JSB SETQ	
0140	00023 062355R		LDA USC+1	
0141	00024 026012R		JMP PCOMM	
0142*				
0143*				
0144	00025	P.702	EQU *	
0145	00025 000000		NOP	
0146	00026 103100		CLF 0	
0147	00027 017227R		JSB SAVE	
0148	00030 062346R		LDA UEQT+2	
0149	00031 016364R		JSB SETQ	
0150	00032 062356R		LDA USC+2	
0151	00033 026012R		JMP PCOMM	
0152*				
0153*				
0154	00034	P.703	EQU *	
0155	00034 000000		NOP	
0156	00035 103100		CLF 0	
0157	00036 017227R		JSB SAVE	
0158	00037 062347R		LDA UEQT+3	
0159	00040 016364R		JSB SETQ	
0160	00041 062357R		LDA USC+3	
0161	00042 026012R		JMP PCOMM	
0162*				
0163*				
0164*				
0165*				
0166	00043	P.704	EQU *	
0167	00043 000000		NOP	
0168	00044 103100		CLF 0	
0169	00045 017227R		JSB SAVE	

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0170 00046 062350R LDA UEQT+4
0171 00047 016364R JSB SETQ
0172 00050 062360R LDA USC+4
0173 00051 026012R JMP PCOMM
0174*
0175*
0176 00052 P.705 EQU *
0177 00052 000000 NOP
0178 00053 103100 CLF 0
0179 00054 017227R JSB SAVE
0180 00055 062351R LDA UEQT+5
0181 00056 016364R JSB SETQ
0182 00057 062361R LDA USC+5
0183 00060 026012R JMP PCOMM
0184*
0185*
0186 00061 P.706 EQU *
0187 00061 000000 NOP
0188 00062 103100 CLF 0
0189 00063 017227R JSB SAVE
0190 00064 062352R LDA UEQT+6
0191 00065 016364R JSB SETQ
0192 00066 062362R LDA USC+6
0193 00067 026012R JMP PCOMM
0194*
0195*
0196 00070 P.707 EQU *
0197 00070 000000 NOP
0198 00071 103100 CLF 0
0199 00072 017227R JSB SAVE
0200 00073 062353R LDA UEQT+7
0201 00074 016364R JSB SETQ
0202 00075 062363R LDA USC+7
0203 00076 026012R JMP PCOMM
0204*****
0205*
0206*****
0207* INITIATOR SECTION
0208*****
0209 00077 I.70 EQU *
0210 00077 000000 NOP
0211 00100 103100 CLF 0 DISABLE INTERRUPT SYSTEM
0212 00101 006400 CLF 0
0213 00102 077743R STB RTX SET RETURN INDEX FOR I.70
0214 00103 077744R STB SAVA ZERO RETURN CODE
0215 00104 066077R LDB I.70 SAVE RETURN ADDRESS
0216 00105 077733R STB EXIT
0217 00106 073747R STA SCODE SAVE SELECT CODE
0218 00107 164223 LDB SEQ17,I
0219 00110 160213 LDA SEQ9,I GET REQUEST
0220 00111 013751R AND #87777 SAVE FUNCTION AND REQUEST
0221 00112 053735R CPA INCD INITIALIZE REQUEST
0222 00113 026122R JMP I.70B YES
0223 00114 006003 SZB,RSS IF LOGICAL LINKAGE PRESENT --PROC
0224 00115 050056 CPA P033 CLEAR REQUEST
0225 00116 026162R JMP I.70A YES

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0226	00117	060054	LDA P01\$	NO-INVALID
0227	00120	073744R	STA SAVA	
0228	00121	017263R	JSB RTRN	RETURN TO DOS
0229	00122		I.70B EQU *	
0230	00122	164215	LDB \$EQ11,I	GET EXTENSION ADDRESS
0231	00123	174223	STB \$EQ17,I	LINK WITH LOGICAL
0232	00124	006004	INB	
0233	00125	160001	LDA B,I	GET EQT19
0234	00126	170210	STA \$EQ6,I	SAVE IN CONTROL WORD
0235	00127	002400	CLA	
0236	00130	073661R	STA EQT3	INSURE EQT RESET
0237	00131	170207	STA \$EQ5,I	CLEAR LINE STATE
0238	00132	170222	STA \$EQ16,I	
0239	00133	060203	LDA \$EQ1	GET BASE EQT ADDRESS
0240	00134	044062	ADB P07\$	COMPUTE EQT26
0241	00135	170001	STA B,I	SAVE AS TIMER ID (DVR70)
0242	00136	044057	ADB P04\$	COMPUTE EQT30
0243	00137	170001	STA B,I	SAVE AS TIMER ID (LOGICAL)
0244*			BUILD BASIC CONTROL WORD	
0245	00140	160210	LDA \$EQ6,I	GET PARAMETER WORD (19)
0246	00141	070001	STA B	WORD IN B
0247	00142	007004	CMR,INB	FORM COMPLIMENT
0248	00143	013720R	AND M60\$	ISOLATE PARITY
0249	00144	002003	SZA,RSS	PARITY OPTION ON
0250	00145	026150R	JMP I.70C	NO
0251	00146	033717R	IOR M40\$	YES/ENABLE PARITY
0252	00147	044052	ADB N01\$	ADJUST CHAR SIZE 3,2,1,0
0253	00150		I.70C EQU *	
0254	00150	001722	ALF,RAL	POSITION PARITY
0255	00151	001200	RAL	BITS FOR 12618 11&10
0256	00152	170210	STA \$EQ6,I	STORE WORD IN EQT6
0257	00153	060001	LDA B	
0258	00154	010070	AND M17\$	ISOLATE CHAR SIZE
0259	00155	130210	IOR \$EQ6,I	MERGE W/PARITY
0260	00156	033706R	IOR B54\$	INDICATE CONTROL WORD 15&14
0261	00157	170221	STA \$EQ15,I	STORE TX CONTROL WORD
0262	00160	033705R	IOR B94\$	HUNT & SYNC FLAG
0263	00161	170210	STA \$EQ6,I	
0264	00162		I.70A EQU *	
0265	00162	060203	LDA \$EQ1	
0266	00163	016364R	JSB SETQ	SET EQT
0267*				
0268	00164	163662R	LDA EQT4,I	SET
0269	00165	010075	AND LBYT\$	STATUS TO
0270	00166	173662R	STA EQT4,I	ZERO
0271	00167	016327R	JSB SETU	SET UNIT RELATED CONSTANTS
0272	00170	063747R	LDA SCODE	
0273	00171	017513R	JSB SETIO	SET I/O INSTRUCTIONS
0274	00172	163665R	LDA EQT9,I	
0275	00173	013751R	AND =B7777	
0276	00174	050056	CPA P03\$	CLEAR REQUEST
0277	00175	026257R	JMP C0	YES
0278	00176	010070	AND M17\$	
0279	00177	050054	CPA P01\$	READ REQUEST
0280	00200	026207R	JMP READ	YES
0281	00201	050055	CPA P02\$	WRITE REQUEST

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0282 00202 026220R      JMP WRITE      YES
0283 00203 050056      CPA P03$      CONTROL REQUEST
0284 00204 026231R      JMP CONTL      YES
0285 00205 037744R      ISZ SAVA      INDICATE ERROR
0286 00206 017263R      JSB PTRN      BACK TO DOS
0287*****
0288*
0289*      READ REQUEST INITIATION
0290*
0291*****
0292 00207      READ EQU *
0293 00207 016611R      JSB LCHK      CHECK FOR LINE OPEN, DATA SET RD
0294 00210 007400      CCB          INDICATE INITIATION CALL
0295 00211 117674R      JSB EQT22,I   CALL LOGICAL READ
0296 00212 026215R      JMP READ1    COMPLETE
0297 00213 016624R READC JSB DRCTV    EVALUATE DIRECTIVE BITS
0298 00214 017263R      JSB PTRN      RETURN TO DOS
0299*
0300 00215      READ1 EQU *
0301 00215 060057      LDA P04$      INDICATE IMMEDIATE COMPLETION
0302 00216 073744R      STA SAVA
0303 00217 017263R      JSB PTRN      RETURN TO DOS
0304*****
0305*
0306*      WRITE REQUEST INITIATION
0307*
0308*****
0309 00220      WRITE EQU *
0310 00220 016611R      JSB LCHK      CHECK FOR LINE OPEN, DATA SET RDY
0311 00221 007400      CCB          INDICATE INITIATION CALL
0312 00222 117675R      JSB EQT23,I   CALL LOGICAL WRITE
0313 00223 026215R      JMP READ1    COMPLETE
0314 00224 016624R WRITC JSB DRCTV    EVALUATE DIRECTIVE BITS
0315 00225 010074      AND RBYT$
0316 00226 017472R      JSB OTA      OUTPUT CHARACTER
0317 00227 017476R      JSB STC      SET CONTROL ON BOARD
0318 00230 017263R      JSB PTRN
0319*****
0320*
0321*      CONTROL REQUEST INITIATION
0322*
0323*****
0324 00231      CONTL EQU *
0325 00231 002400      CLA
0326 00232 007400      CCB          INDICATE INITIATION CALL
0327 00233 117676R      JSB EQT24,I   CALL LOGICAL CONTROL
0328 00234 026215R      JMP READ1    COMPLETE
0329 00235 016624R      JSB DRCTV    EVALUATE DIRECTIVE BITS
0330 00236 163665R      LDA EQT9,I
0331 00237 001727      ALF,ALF
0332 00240 001222      RAL,RAL
0333 00241 010072      AND M77$      ISOLATE FUNCTION CODE
0334 00242 040047      ADA M04$
0335 00243 002021      SSA,RSS      FUNCTION LT 5
0336 00244 026250R      JMP CNLT1    NO-INVALID
0337 00245 042256R      ADA CNLT      YES-CALCULATE TABLE ADDRESS

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0338 00246 160000      LDA A,I
0339 00247 124000      JMP A,I          PROCESS BY FUNCTION CODE
0340*
0341*
0342 00250              CNTL1 EQU *
0343 00250 137662R      ISZ EQT4,I      INDICATE INVALID REQUEST
0344 00251 026215R      JMP READ1
0345*
0346*
0347*          CONTROL TRANSFER TABLE
0348*
0349 00252 000257R      DEF C0          CLEAR
0350 00253 000215R      DEF READ1      INITIALIZE(NO ADDITIONAL PROCESS
0351 00254 000266R      DEF C2          LINE OPEN
0352 00255 000304R      DEF C3          LINE CLOSE
0353 00256 000256R CNTLT DEF *
0354*
0355*          CLEAR REQUEST
0356*
0357 00257              C0      EQU *
0358 00257 160223      LDA SEQ17,I
0359 00260 002002      SZA          SKIP DEQUEUE IF NOT LINKED
0360 00261 017315R      JSB DQT      DEQUE TIMERS
0361 00262 016310R      JSB C4      GO CLEAR I/F
0362 00263 002400      CLA
0363 00264 170223      STA SEQ17,I  BREAK LINKAGE
0364 00265 026215R      JMP READ1
0365*
0366*          LINE OPEN REQUEST
0367*
0368 00266              C2      EQU *
0369 00266 163666R      LDA EQT10,I    GET PARAMETER 1
0370 00267 027550R      JMP COMM
0371 00270              C2E     EQU *
0372 00270 060055      LDA AOPEN
0373 00271 173663R      STA EQT5,I      LINE STATE= AWAITING OPEN
0374 00272 060041      LDA N10$
0375 00273 173702R      STA EQT34,I    SET FOR 2 SEC. DELAY
0376 00274              C2D     EQU *
0377 00274 066462R      LDB TD1A
0378 00275 060051      LDA N02$
0379 00276 016444R      JSB DTIM      START TIMER #1, 200 NS
0380 00277 017263R      JSB RTRN
0381*
0382*
0383*
0384 00300              C2R     EQU *
0385 00300 000000      NOP
0386 00301 060055      LDA AOPEN
0387 00302 173663R      STA EQT5,I      LINE STATE= AWAITING OPEN
0388 00303 026270R      JMP C2E      NO
0389*
0390*
0391*
0392*
0393*          LINE CLOSE REQUEST

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0394*
0395 00304 C3 EQU *
0396 00304 016310R JSB C4 GO CLEAR I/F
0397 00305 063752R LDA =D=50 SET MAX TIME AT 10 SEC.
0398 00306 173702R STA EGT34,I
0399 00307 026274R JMP C2D START TIMER
0400*
0401*
0402 00310 C4 EQU *
0403 00310 000000 NOP
0404 00311 060053 LDA CLOSE LINE STATE
0405 00312 170207 STA SEQ5,I EQUALS CLOSE
0406 00313 063731R LDA DUM15
0407 00314 130221 IOR SEQ15,I
0408 00315 170221 STA SEQ15,I
0409 00316 063747R LDA SCODE
0410 00317 017513R JSB SET10
0411 00320 017501R JSB CLC
0412 00321 160221 LDA SEQ15,I
0413 00322 017472R JSB OTA
0414 00323 063706R LDA B54$ LOAD CLEAR CNT WORD
0415 00324 017472R JSB OTA
0416 00325 017501R JSB CLC TURN OFF BOARD
0417 00326 126310R JMP C4,I RETURN TO CALLER
0418*
0419*
0420*****
0421*
0422* SET UNIT RELATED DATA
0423*
0424*****
0425 00327 SETU EQU *
0426 00327 000000 NOP
0427 00330 160205 LDA SEQ3,I GET UNIT & SELECT CODE
0428 00331 031727 ALF,ALF
0429 00332 031222 RAL,RAL POSITION UNIT FIELD
0430 00333 010062 AND P07$
0431 00334 042343R ADA UTBL CALCULATE TABLE ENTRY
0432 00335 064203 LDB SEQ1
0433 00336 174000 STB A,I SAVE EGT
0434 00337 040063 ADA P08$ OFFSET TO NEXT TABLE
0435 00340 067747R LDB SCODE
0436 00341 174000 STB A,I SAVE SELECT CODE
0437 00342 126327R JMP SETU,I
0438*
0439 00343 030344R UTBL DEF ++1
0440 00344 000000 UEQT BSS 8 HOLDS EGT FOR UNIT 0-7
0441 00354 000000 USC BSS 8 HOLDS SC FOR UNIT 0-7
0442*
0443*
0444*****
0445*
0446* SET EGT TABLE
0447*
0448* A=ADDRESS OF EGT
0449*

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0450*****
0451 00364      SETQ EQU *
0452 00364 000000      NOP
0453 00365 070300      STA EQTB      SAVE EQT ON BASE PAGE
0454 00366 040055      ADA P02$
0455 00367 053661R     CPA EQT3      ALREADY SET
0456 00370 126364R     JMP SETQ,I    YES
0457 00371 073661R     STA EQT3
0458 00372 002004      INA
0459 00373 073662R     STA EQT4      FILL
0460 00374 002004      INA          TABLE
0461 00375 073663R     STA EQT5
0462 00376 002004      INA
0463 00377 073664R     STA EQT6
0464 00400 040056      ADA P03$
0465 00401 073665R     STA EQT9
0466 00402 002004      INA
0467 00403 073666R     STA EQT10
0468 00404 040057      ADA P04$
0469 00405 073704R     STA EQT14
0470 00406 002004      INA
0471 00407 073667R     STA EQT15
0472 00410 002004      INA
0473 00411 073670R     STA EQT16
0474 00412 002004      INA
0475 00413      SETQ2 EQU *
0476 00413 160000      LDA A,I      LINK TO EXTENSION
0477 00414 002004      INA
0478 00415 073672R     STA EQT19
0479 00416 002004      INA
0480 00417 073673R     STA EQT20
0481 00420 040055      ADA P02$
0482 00421 164000      LDB A,I
0483 00422 077674R     STB EQT22
0484 00423 002004      INA
0485 00424 164000      LDB A,I
0486 00425 077675R     STB EQT23
0487 00426 002004      INA
0488 00427 164000      LDB A,I
0489 00430 077676R     STB EQT24
0490 00431 002004      INA
0491 00432 073677R     STA EQT25
0492 00433 040055      ADA P02$
0493 00434 073700R     STA EQT27
0494 00435 040057      ADA P04$
0495 00436 073701R     STA EQT31
0496 00437 040056      ADA P03$
0497 00440 073702R     STA EQT34
0498 00441 002004      INA
0499 00442 073703R     STA EQT35
0500 00443 126364R     JMP SETQ,I    RETURN
0501*****
0502*
0503*      DRIVER TIMER START
0504*
0505*****

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0506	00444		DTIM	EQU *	B=PROCESSOR ADDRESS
0507	00444	000000		NOP	A=TIME INTERVAL
0508	00445	173700R		STA EQT27,I	SAVE VALUE
0509	00446	163670R		LDA EQT16,I	GET TIMER FLAGS
0510	00447	001522		ERA,RAL	PHYSICAL TIMER BIT TO E
0511	00450	030054		IOR P01\$	SET IT
0512	00451	173670R		STA EQT16,I	
0513	00452	163700R		LDA EQT27,I	GET VALUE
0514	00453	002040		SEZ	INITIATE REQUEST
0515	00454	003004		CMA,INA	NO-INDICATE RESET
0516	00455	177700R		STB EQT27,I	SAVE PROCESSOR ADDRESS
0517	00456	067700R		LDB EQT27	
0518	00457	044052		ADB N01\$	PASS EQT26 AS TIMER BLOCK
0519	00460	016002X		JSB \$TIME	
0520	00461	126444R		JMP DTIM,I	
0521*		TIMER #1			
0522*					
0523	00462	000463R	TD1A	DEF TD1	
0524	00463		TD1	EQU *	
0525	00463	000000		NOP	
0526	00464	103100		CLF 0	DISABLE INTERRUPT SYSTEM
0527	00465	006404		CLB,INB	
0528	00466	016575R		JSB TIMOF	SETUP FOR TIMER OFF LIST
0529	00467	017505R		JSB STAT	INPUT STATUS
0530	00470	167663R		LDB EQT5,I	
0531	00471	054057		CPB PSND	LINE STATE = PREPARE TO SEND?
0532	00472	026523R		JMP TD1D	YES
0533	00473	001222		RAL,RAL	DATA SET READY
0534	00474	002020		SSA	
0535	00475	026505R		JMP TD1B	YES
0536	00476	006003		SZB,RSS	NO=LINE = CLOSE?
0537	00477	026513R		JMP TD1H	YES=COMPLETE
0538	00500		TD1I	EQU *	
0539	00500	060051		LDA N02\$	NO=KEEP TIMER RUNNING
0540	00501		TD1F	EQU *	
0541	00501	066462R		LDB TD1A	
0542	00502	016444R		JSB DTIM	
0543	00503	102100	TD1C	STF 0	ENABLE INTERRUPT SYSTEM
0544	00504	126463R		JMP TD1,I	
0545*					
0546	00505		TD1B	EQU *	
0547	00505	006003		SZB,RSS	LINE=CLOSE?
0548	00506	026520R		JMP TD1K	YES=CONTINUE TIMER
0549	00507	137702R		ISZ EQT34,I	LINE STABILIZE DELAY OVER
0550	00510	026500R		JMP TD1I	NO
0551	00511	060056		LDA IDLE	
0552	00512	173663R		STA EQT5,I	LINE STATE = IDLE
0553	00513		TD1H	EQU *	
0554	00513	017315R		JSB DQT	DEQUEUE TIMERS
0555	00514	017501R		JSB CLC	CLR I/F BOARD
0556	00515	060300		LDA EQTB	
0557	00516	016001X		JSB \$PCOM	COMPLETE REQUEST
0558	00517	026503R		JMP TD1C	
0559	00520		TD1K	EQU *	
0560	00520	137702R		ISZ EQT34,I	MAX TIME ELAPSED
0561	00521	026500R		JMP TD1I	NO

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0562 00522 026513R      JMP TD1H      YES=COMPLETE
0563*
0564 00523              TD1D EQU +
0565 00523 013403R      AND RSTAT+2      ISOLATE WRITE STATUS BITS
0566 00524 053403R      CPA RSTAT+2      STATUS OK
0567 00525 026527R      JMP ++2          YES
0568 00526 026531R      JMP TD1E          NO
0569 00527              TD1G EQU +
0570 00527 016755R      JSB STOUT      START OUTPUT
0571 00530 026503R      JMP TD1C
0572 00531              TD1E EQU +
0573 00531 060052      LDA N01$
0574 00532 137702R      ISZ EQT34,I      TIME RUN OUT?
0575 00533 026501R      JMP TD1F      NO-DELAY 100 MS
0576 00534 026527R      JMP TD1G      YES=START OUTPUT ANYWAY
0577*
0578*      TIMER #2
0579*
0580 00535 000536R      TD2A DEF TD2
0581 00536              TD2 EQU +
0582 00536 000000      NOP
0583 00537 103100      CLF 0      DISABLE INTERRUPT SYSTEM
0584 00540 006404      CLB,INB
0585 00541 016575R      JSB TIMOF      SETUP FOR TIMER OFF LIST
0586 00542 016710R      JSB STIN      START INPUT
0587 00543 102100      STF 0      ENABLE INTERRUPT SYSTEM
0588 00544 126536R      JMP TD2,I
0589*
0590*
0591*      TIMER #3 --LINE STATE MONITOR
0592*
0593 00545 000546R      TD3A DEF TD3
0594 00546 000000      TD3 NOP
0595 00547 103100      CLF 0      DISABLE INTERRUPTS
0596 00550 006404      CLB,INB
0597 00551 016575R      JSB TIMOF      SETUP FOR TIMER OFF LIST
0598 00552 016570R      JSB TMON      GET BACK ON
0599 00553 102500      05 LIA SC      INPUT BOARD STATUS
0600 00554 173677R      STA EQT25,I
0601 00555 013711R      AND S$CC      DATA SET READY
0602 00556 002002      SZA      IS IT SET?
0603 00557 026566R      JMP TD3B      YES-LET IT RUN
0604 00560 060055      LDA P02$
0605 00561 073743R      STA RTX      NO-SETUP TIMER RETURN
0606 00562 062546R      LDA TD3
0607 00563 072767R      STA LTIM
0608 00564 067017R      LDB LSIT
0609 00565 027000R      JMP LSWCH      SIMULATE I/F INTERRUPT
0610 00566 102100      TD3B STF 0      ENABLE INTERRUPTS
0611 00567 126546R      JMP TD3,I
0612*
0613*
0614 00570 000000      TMON NOP
0615 00571 060040      LDA N64$      6.4 SECONDS
0616 00572 066545R      LDB TD3A      LINE MONITOR
0617 00573 016444R      JSB DTIM

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0618 00574 126570R      JMP TMON,I
0619*
0620*
0621*****
0622*
0623*      TIME OFF
0624*      INITIAL SETUP FOR TIMEOUT
0625*      A=EQT
0626*      B=TIMER FLAG MASK
0627*
0628*****
0629 00575      TIMOF EQU *
0630 00575 000000      NOP
0631 00576 076610R      STB TMOF1      SAVE TIMER TYPE
0632 00577 016364R      JSB SETQ      SET EQT
0633 00600 163661R      LDA EQT3,I
0634 00601 010072R      AND M77$      GET SELECT CODE
0635 00602 017513R      JSB SETIO      SET I/O INST.
0636 00603 062610P      LDA TMOF1
0637 00604 003000      CMA
0638 00605 113670R      AND EQT16,I    CLEAR TIMER IN PROGRESS
0639 00606 173670R      STA EQT16,I
0640 00607 126575R      JMP TIMOF,I
0641*
0642 00610 000000      TMOF1 NOP
0643*****
0644*
0645*      LINE CHECK
0646*
0647*****
0648 00611      LCHK EQU *
0649 00611 000000      NOP
0650 00612 163663R      LDA EQT5,I
0651 00613 050053R      CPA CLOSE      LINE CLOSED
0652 00614 026622R      JMP LCHK1      YES
0653 00615 017505R      JSB STAT      NO- GET I/F STATUS
0654 00616 023711R      XOR B13$      COMPLIMENT DATA SET READY
0655 00617 013711R      AND B13$      AND ISOLATE
0656 00620 001200      RAL      POSITION FOR LINE ERROR
0657* NOTE-"DATA SET NOT READY" INDICATES LINE ERROR
0658 00621 126611R      JMP LCHK,I
0659 00622      LCHK1 EQU *
0660 00622 137662R      ISZ EQT4,I      INVALID REQUEST
0661 00623 026215R      JMP READ1      IMMEDIATE COMPLETION
0662*****
0663*
0664*      DIRECTIVE EVALUATOR
0665*
0666*      A= DIRECTIVE BITS (15- 8), OUTPUT DATA (7-0)
0667*      15-START READ
0668*      14-START WRITE
0669*      13-NO OPERATION
0670*
0671*      B= TIMER REQUEST
0672*      <0- INITIATE/UPDATE VALUE
0673*      =0- NO REQUEST

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0674* >0- CANCEL REQUEST

0675*

0676*

0677******

0678 00624 DRCTV EQU *

0679 00624 000000 NOP

0680 00625 072661R STA DRCTA SAVE DIRECTIVES

0681 00626 006003 SZB,RSS TIMING REQUEST

0682 00627 026650R JMP DRCT1 NO

0683 00630 163670R LDA EQT16,I YES

0684 00631 006020 SSB CANCEL REQUEST

0685 00632 026636R JMP DRCT2 NO

0686* YES

0687 00633 001665 ELA,CLE,ERA CLEAR IN PROGRESS BIT

0688 00634 006400 CLB INDICATE CANCEL

0689 00635 026641R JMP DRCT3

0690 00636 DRCT2 EQU *

0691 00636 002020 SSA TIMER IN PROGRESS

0692 00637 007004 CMB,INB YES-INDICATE RESET

0693 00640 033707R IOR B15\$ SET IN PROGRESS BIT

0694 00641 DRCT3 EQU *

0695 00641 173670R STA EQT16,I UPDATE FLAGS

0696 00642 074000 STB A

0697 00643 066766R LDB LTIMA

0698 00644 177701R STB EQT31,I SET PROCESSOR TO LOGICAL TIMER

0699 00645 067701R LDB EQT31

0700 00646 044052 ADB N01\$ PASS EQT30 AS TIMER BLOCK

0701 00647 016002X JSB \$TIME CALL TIMER

0702 00650 DRCT1 EQU *

0703 00650 062661R LDA DRCTA

0704 00651 001210 RAL,SLA START READ

0705 00652 016662R JSB SREAD YES

0706 00653 001210 RAL,SLA START WRITE

0707 00654 016722R JSB SWRIT YES

0708 00655 002020 SSA NOP

0709 00656 017263R JSB RTRN YES

0710 00657 062661R LDA DRCTA NO DIRECTIVES

0711 00660 126624R JMP DRCTV,I RETURN

0712*

0713 00661 000000 DRCTA NOP

0714*

0715******

0716*

0717* START READ

0718*

0719******

0720 00662 SREAD EQU *

0721 00662 000000 NOP

0722 00663 163663R LDA EQT5,I

0723 00664 050064 CPA RECV LINE STATE= RECEIVE

0724 00665 026701R JMP SRD1 YES

0725 00666 050060 CPA SEND LINE STATE= SEND

0726 00667 026704R JMP SRD3 YES

0727 00670 SRD4 EQU *

0728 00670 060063 LDA PRCV\$ LNE STATE=PREPARE TO RCV #3

0729 00671 173663R STA EQT5,I

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0730 00672 017501R JSB CLC      DISABLE BOARD
0731 00673 060052   LDA N01$      DELAY 100 MS
0732 00674 066535R   LDB TD2A
0733 00675 016444R   JSB DTIM      START TIMER #2
0734 00676 017415R   JSB RCV      CONFIGURE FOR RECEIVE
0735 00677 017501R   JSB CLC      TURN OFF OTHER HALF
0736 00700 017263R   JSB RTRN
0737*
0738 00701          SRD1 EQU *
0739 00701 060063   LDA PRCV3      RETURN ADDRESS
0740 00702 173663R   STA EQT5,I    STORE RETURN ADDRESS
0741 00703 027112R   JMP LSIF1
0742*
0743 00704          SRD3 EQU *
0744 00704 060061   LDA PRCV1
0745 00705 173663R   STA EQT5,I    SET LINE STATE= PREPARE TO RCV#1
0746 00706 017476R   JSB STC      ENABLE I/F INTERRUPTS
0747 00707 017263R   JSB RTRN
0748*
0749*      START INPUT SUBROUTINE
0750 00710 000000   STIN NOP
0751 00711 163664R   LDA EQT6,I    LOAD REC CONTROL WORD
0752 00712 033722R   IOR CDCR      CD BIT ON
0753 00713 013741R   AND PAROF
0754 00714 017472R   JSB OTA      EOUTPUT CONTROL WORD
0755 00715 016570R   JSB TMON     START MONITOR
0756 00716 017476R   JSB STC      ENABLE INTERRUPTS
0757 00717 060043   LDA N08$      SET ERROR
0758 00720 173702R   STA EQT34,I   COUNTER
0759 00721 126710R   JMP STIN,I
0760*
0761*
0762******
0763*
0764*      START WRITE
0765*
0766******
0767 00722          SWRIT EQU *
0768 00722 000000   NOP
0769 00723 017501R   JSB CLC      TURN OFF INTERRUPTS
0770 00724 017436R   JSB SND      CONFIGURE FOR SEND
0771 00725 017501R   JSB CLC
0772 00726 167663R   LDB EQT5,I    GET PREVIOUS STATE
0773 00727 060057   LDA PSND
0774 00730 173663R   STA EQT5,I    SET LINE STATE= PREPARE TO SEND
0775 00731 062661R   LDA DRCTA     GET CHARACTER
0776 00732 010074   AND RBYTES
0777 00733 173703R   STA EQT35,I    SAVE CHAR. FOR D/P
0778 00734 054060   CPB SEND      PRIOR STATE = SEND
0779 00735 026752R   JMP SWRT1     YES/BYPASS TURNAROUND
0780 00736 163672R   LDA EQT19,I   GET TEST BITS
0781 00737 002021   SSA,RSS      FULL DUX SYSTEM
0782 00740 026744R   JMP RERC      NO
0783 00741 016570R   JSB TMON     START LINE MONITOR
0784 00742 017476R   JSB STC      ENABLE INTERRUPTS
0785 00743 017263R   JSB RTRN

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0786 00744 060043 RERC LDA N0B$ MAX = 300+700 MS
0787 00745 173702R STA EGT34,I
0788 00746 060051 LDA N02$ NO-ONLY DELAY 200 MS
0789 00747 066462R LDB TD1A USE TIME DELAY #1
0790 00750 016444R JSB DTIM
0791 00751 017263R JSB RTRN
0792 00752 SWRT1 EQU *
0793 00752 017472R JSB OTA OUTPUT CHAR
0794 00753 017476R JSB STC ENABLE INTERRUPTS
0795 00754 017263R JSB RTRN
0796*****
0797* START OUTPUT
0798*****
0799 00755 STOUT EQU *
0800 00755 000000 NOP
0801 00756 060065 LDA SSYN
0802 00757 173663R STA EGT5,I
0803 00760 163673R LDA EGT20,I
0804 00761 010074 AND RBYTS
0805 00762 017472R JSB OTA
0806 00763 016570R JSB TMON START LINE MONITOR
0807 00764 017476R JSB STC ENABLE INTERRUPTS
0808 00765 126755R JMP STOUT,I
0809*****
0810*****
0811*
0812* LOGICAL TIMER
0813*
0814*****
0815 00766 000767R LTIMA DEF LTIM
0816*
0817 00767 LTIM EQU *
0818 00767 000000 NOP
0819 00770 103100 CLF 0 TURN OFF INTERRUPT SYSTEM
0820 00771 067707R LDB B15$
0821 00772 016575R JSB TIMOF SETUP FOR TIMER OFF LIST
0822 00773 017505R JSB STAT I/P BOARD STATUS
0823 00774 060055 LDA P02$
0824 00775 073743R STA RTX INDICATE TIMER RETURN
0825 00776 060063 LDA P08$
0826 00777 067003R LDB LSTT PROCESS
0827 01000 147663R LSWCH ADB EGT5,I BY
0828 01001 164001 LDB B,I LINE
0829 01002 124001 JMP B,I STATE
0830 01003 001004R LSTT DEF ++1
0831 01004 001033R DEF LSTA 0-CLOSED
0832 01005 001037R DEF LSTB 1-NOT USED
0833 01006 001037R DEF LSTB 2-AWAITING OPEN
0834 01007 001037R DEF LSTB 3-IDLE
0835 01010 001065R DEF LSTD 4-PREPARE TO SEND
0836 01011 001065R DEF LSTD 5-SEND
0837 01012 001131R DEF LSTC 6-PREPARE TO RCV #1 (FLUSH WRITE)
0838 01013 001131R DEF LSTC 7-PREPARE TO RCV #2 (DROP CF)
0839 01014 001131R DEF LSTC 8-PREPARE TO RCV #3 (DELAY)
0840 01015 001131R DEF LSTC 9-RECEIVE
0841 01016 001065R DEF LSTD

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0842*
0843 01017 001020R LSIT DEF **1
0844 01020 001034R DEF LSIA 0-CLOSED
0845 01021 001034R DEF LSIB 1-NOT USED
0846 01022 001036R DEF LSIC 2-AWAITING OPEN
0847 01023 001034R DEF LSIA 3-IDLE
0848 01024 001053R DEF LSII 4-PREPARE TO SEND
0849 01025 001064R DEF LSID 5-SEND
0850 01026 001074R DEF LSIE 6-PREPARE TO RCV #1 (FLUSH WRITE
0851 01027 001102R DEF LSIF 7-PREPARE TO RCV #2 (DROP CF)
0852 01030 001152R DEF LSIH 8-PREPARE TO RCV #3 (DELAY)
0853 01031 001130R DEF LSIG 9-RECEIVE
0854 01032 001174R DEF LSIK 10-SEND SYNCs
0855*
0856 01033 LSTA EQU *
0857 01033 017263R JSB RTRN
0858*
0859*
0860*
0861*
0862 01034 LSIB EQU *
0863 01034 LSIA EQU *
0864 01034 017501R JSB CLC TURN OFF BOARD
0865 01035 017263R JSB RTRN
0866*
0867*
0868*
0869*
0870 01036 LSIC EQU *
0871 01036 002400 CLA
0872 01037 LSTR EQU *
0873 01037 006400 CLB
0874 01040 017341R JSB BSTAT PROCESS BOARD STATUS
0875 01041 000000 NOP BAD
0876 01042 00663R LDB EQT5,I GOOD - INDICATE CONTINUE
0877 01043 017676R JSR EQT24,I CALL LOGICAL CONTROL ENTRY
0878 01044 0027050R JMP LSIC1 COMPLETE
0879 01045 016624R JSB DRCTV CONTINUE-EVALUATE DIRECTIVE
0880 01046 017476R JSB STC ENABLE INTERRUPTS
0881 01047 017263R JSB RTRN
0882 01050 LSIC1 EQU *
0883 01050 000056 LDA IDLE
0884 01051 0173663R STA EQT5,I SET LINE STATE= IDLE
0885 01052 017202R JSB DONE
0886*
0887*
0888 01053 LSII EQU *
0889 01053 003667R LDA EQT15,I
0890 01054 003723R IOR CDTX
0891 01055 003722R IOR CDCR
0892 01056 017472R JSB OTA
0893 01057 000060 LDA SEND
0894 01060 0173663R STA EQT5,I LINE STATE= SEND
0895 01061 003703R LDA EQT35,I GET PENDING CHAR.
0896 01062 017472R JSB OTA O/P TO INTERFACE
0897 01063 017263R JSB RTRN

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0898	01064	LSID	EQU *	
0899	01064 002400		CLA	
0900	01065	LSTD	EQU *	
0901	01065 006404		CLB, INB	
0902	01066 017341R		JSB BSTAT	CHECK STATUS
0903	01067 000000		NOP	
0904	01070	LSID1	EQU *	
0905	01070 167663R		LDB EQT5, I	
0906	01071 117675R		JSB EQT23, I	CALL LOGICAL WRITE ENTRY
0907	01072 017202R		JSB DONE	COMPLETE
0908	01073 026224R		JMP WRITC	CONTINUE
0909*				
0910*				
0911	01074	LSIE	EQU *	
0912	01074 063740R		LDA PAD	OUTPUT PAD CHAR
0913	01075 017472R		JSB OTA	CHANGE STATE
0914	01076 060062		LDA PRCV2	TO PREPARE TO RCV2
0915	01077 173663R		STA EQT5, I	STORE STATUS
0916	01100 017476R		JSB STC	ENABLE INTERRUPTS
0917	01101 017263R		JSB RTRN	RETURN
0918*				
0919*				
0920	01102	LSIF	EQU *	
0921	01102 163672R		LDA EQT19, I	GET TEST BITS
0922	01103 002021		SSA, RSS	FULL DUPLEX
0923	01104 026670R		JMP SRD4	NO/HALF DVX SYSTEM
0924	01105 060063		LDA PRCV3	LINE STATE EQUALS
0925	01106 173663R		STA EQT5, I	PREPARE TO RCV 3
0926	01107 017501R		JSB CLC	DISABLE BOARD
0927	01110 017415R		JSB PCV	
0928	01111 027123R		JMP LMON	
0929	01112 060063	LSIF1	LDA PRCV3	
0930	01113 173663R		STA EQT5, I	
0931	01114 163664R		LDA EQT6, I	RX CONTROL WORD
0932	01115 033722R		IOR CDCR	CD BIT ON
0933	01116 013741R		AND PAROF	PARITY OFF
0934	01117 017472R		JSB OTA	OUTPUT
0935	01120 163673R		LDA EQT20, I	SYNC CHAR
0936	01121 033750R		IOR SYN	BIT 14 ON
0937	01122 017472R		JSB OTA	OUTPUT
0938	01123 016570R	LMON	JSB TMON	
0939	01124 017476R		JSB STC	
0940	01125 060043		LDA N08S	
0941	01126 173702R		STA EQT34, I	
0942	01127 017263R		JSB RTRN	
0943*				
0944*				
0945	01130	LSIG	EQU *	
0946	01130 002400		CLA	
0947	01131	LSTC	EQU *	
0948	01131 007400		CCB	
0949	01132 017341R		JSB BSTAT	CHECK STATUS
0950	01133 027141R		JMP LSIG1	BAD
0951	01134 002020		SSA	TIMEOUT
0952	01135 027141R		JMP LSIG1	YES
0953	01136 167677R		LDB EQT25, I	

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0954 01137 006021      SSB,RSS          BUFFER READY
0955 01140 017263R     JSB RTRN          NO-RETURN
0956 01141             LSIG1 EQU *
0957 01141 073734R     STA HOLD          STATUS AND DATA
0958 01142 001222      RAL,RAL          BIT 13 ON
0959 01143 002020      SSA
0960 01144 016710R     JSB STIN          YES RESET BOARD
0961 01145 063734R     LDA HOLD
0962 01146 167663R     LDB EQT5,I
0963 01147 117674R     JSB EQT22,I      CALL LOGICAL READ ENTRY
0964 01150 017202R     JSB DONE          COMPLETE
0965 01151 026213R     JMP READC          CONTINUE
0966*
0967*
0968 01152             LSIH EQU *
0969 01152 163677R     LDA EQT25,I      GET DATA/STATUS WORD
0970 01153 001200      RAL              SYNC STATUS ON
0971 01154 002020      SSA              YES/TEST CHARACTER
0972 01155 027112R     JMP LSIF1
0973 01156 001300      RAR
0974 01157 010074      AND RBYT$      MASK OFF BITS
0975 01160 153673R     CPA EQT20,I      SYNC CHARACTER
0976 01161 027163R     JMP SYNEYE      YES/LINE STATE = RECEIVE
0977 01162 027112R     JMP LSIF1
0978 01163 060043      SYNEYE LDA N00$   RESET ERROR
0979 01164 173702R     STA EQT34,I      COUNT
0980 01165 064064      LDB RECV
0981 01166 177663R     STB EQT5,I
0982 01167 163664R     LDA EQT6,I
0983 01170 033722R     IOR CDCR
0984 01171 013732R     AND ECHO
0985 01172 017472R     JSB OTA
0986 01173 017263R     JSB RTRN
0987*
0988 01174             LSIK EQU *
0989 01174 060057      LDA PSND
0990 01175 173663R     STA EQT5,I
0991 01176 163673R     LDA EQT20,I
0992 01177 010074      AND RBYT$
0993 01200 017472R     JSB OTA
0994 01201 017263R     JSB RTRN
0995*
0996*
0997*****
0998*
0999 01202             DONE EQU *
1000*****
1001 01202 000000      NOP
1002 01203 017501R     JSB CLC          DISABLE BOARD
1003 01204 064300      LDB EQTB          EQT BASE
1004 01205 047742R     ADB PLUS          TX CONTROL WORD
1005 01206 164001      LDB B,I
1006 01207 005700      RLF              MOVE BIT 12
1007 01210 004010      SLB              TO ZERO
1008 01211 027245R     JMP DONE2        WE ARE XMITTING
1009 01212 063502R     DONE1 LDA 03      CLC FOR RX

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1010 01213 002004      INA          INC FOR XMIT
1011 01214 073502R     STA 03
1012 01215 017501R     JSB CLC      DISABLE BOARD
1013 01216 063502R     LDA 03      RETURN
1014 01217 010052      AND N01$    TO
1015 01220 073502R     STA 03      NORMAL
1016 01221 060056      LDA IDLE     LINE STATE
1017 01222 173663R     STA EQT5,I   EQUALS IDLE
1018 01223 017315R     JSB DQT
1019 01224 060300      LDA EQTB
1020 01225 016001X     JSB $PCOM    NOTIFY DOS OF COMPLETION
1021 01226 017263R     JSB RTRN
1022*
1023*****
1024*
1025 01227          SAVE EQU *
1026*****
1027 01227 000000      NOP
1028 01230 073744R     STA SAVA      A
1029 01231 077745R     STB SAVB      B
1030 01232 001520      ERA,ALS      E
1031 01233 102201      SOC
1032 01234 002004      INA          0
1033 01235 073746R     STA SAVED
1034 01236 002404      CLA,INA
1035 01237 073743R     STA RTX      INDICATE INTERRUPT
1036 01240 063227R     LDA SAVE
1037 01241 040050      ADA N03$     CALCULATE INTERRUPT ENTRY
1038 01242 160000      LDA A,I
1039 01243 073733R     STA EXIT     SAVE RETURN ADDRESS
1040 01244 127227R     JMP SAVE,I
1041 01245 063502R     LDA 03      CLC FOR TX
1042 01246 010052      AND N01$     DEC FOR RX
1043 01247 073502R     STA 03
1044 01250 017501R     JSB CLC      DISABLE BOARD
1045 01251 063502R     LDA 03      RETURN
1046 01252 002004      INA          TO
1047 01253 073502R     STA 03      NORMAL
1048 01254 163667R     LDA EQT15,I  TX CONTROL WORD
1049 01255 013737R     AND NSEND    SEND BIT OFF
1050 01256 173667R     STA EQT15,I
1051 01257 017472R     JSB OTA      OUTPUT CONTROL WORD
1052 01260 060056      LDA IDLE     LINE STATE
1053 01261 173663R     STA EQT5,I   EQUALS IDLE
1054 01262 027223R     JMP DONE2
1055*
1056*
1057*****
1058*
1059*      COMMON RETURN
1060*
1061*****
1062 01263          RTRN EQU *
1063 01263 000000      NOP
1064 01264 063743R     LDA RTX      DETERMINE RETURN TYPE
1065 01265 002003      SZA,RSS

```

```

1066 01266 027310R JMP RTRN1 I.70
1067 01267 022011 SLA,RSS
1068 01270 027313R JMP RTRN0 LOGICAL TIMER
1069 01271 RTRN2 EQU * P.70
1070 01271 063746R LDA SAVE0 RESTORE
1071 01272 103101 CLO
1072 01273 000036 SLA,FLA E
1073 01274 102101 STF 1 0
1074 01275 063744R LDA SAVA A
1075 01276 064271 LDB MPTFL TEST MEMORY PROTECT
1076 01277 006003 SZB,RSS ON
1077 01300 027304R JMP RTRN3 YES
1078 01301 067745R LDB SAVB RESTORE B
1079 01302 102100 STF 0 ENABLE INTERRUPT SYSTEM
1080 01303 127733R JMP EXIT,I
1081 01304 RTRN3 EQU *
1082 01304 067745R LDB SAVB RESTORE B
1083 01305 102100 STF 0 ENABLE INTERRUPTS
1084 01306 102725 STC 5 ENABLE MEMORY PROTECT
1085 01307 127733R JMP EXIT,I RETURN
1086*
1087 01310 RTRN1 EQU *
1088 01310 163704R LDA EQT14,I
1089 01311 073745R STA SAVB
1090 01312 027271R JMP RTRN2
1091 01313 102100 RTRN0 STF 0 ENABLE INTERRUPTS
1092 01314 126767R JMP LTIM,I
1093*
1094*
1095*****
1096*
1097* DEQUEUE TIMERS
1098*
1099*****
1100 01315 DQT EQU *
1101 01315 000000 NOP
1102 01316 163670R LDA EQT16,I
1103 01317 002021 SSA,RSS LOGICAL TIMER IN PROGRESS
1104 01320 027327R JMP DQT1 NO
1105 01321 001665 ELA,CLE,ERA YES
1106 01322 173670R STA EQT16,I CLEAR FLAG
1107 01323 002400 CLA
1108 01324 067701R LDB EQT31
1109 01325 044052 ADB N01$
1110 01326 016002X JSB $TIME CANCEL REQUEST
1111 01327 DQT1 EQU *
1112 01327 163670R LDA EQT16,I
1113 01330 002011 SLA,RSS DVR70 TIMER ACTIVE
1114 01331 127315R JMP DQT,I NO-DONE
1115 01332 001120 ARS,ALS YES
1116 01333 173670R STA EQT16,I CLR FLAG
1117 01334 067700R LDB EQT27
1118 01335 044052 ADB N01$
1119 01336 002400 CLA
1120 01337 016002X JSB $TIME CANCEL REQUEST
1121 01340 127315R JMP DQT,I

```

```

1122*
1123*****
1124*
1125*   BOARD STATUS CHECK
1126*           B= -1 READ, 0 CONTROL,+1 WRITE
1127*           P+1=BAD STATUS, P+2= GOOD STATUS
1128*****
1129 01341      BSTAT EQU *
1130 01341 000000      NOP
1131 01342 073730R      STA COMP      CLEAR COMPOSITE STATUS
1132 01343 047400R      ADB STATX
1133 01344 163672R      LDA EQT19,I    FULL DUX SYSTEM
1134 01345 002020      SSA
1135 01346 044061      ADB P063      YES/NEW TABLE
1136 01347 163677R      LDA EQT25,I
1137 01350 110001      AND B,I
1138 01351 150001      CPA B,I      CHECK STATUS
1139 01352 027376R      JMP BSTAT1    OK
1140 01353 060057      LDA P043      BAD
1141 01354 043730R      ADA COMP      UPDATE
1142 01355 073730R      STA COMP      INDICATE LINE ERROR
1143 01356      BST3 EQU *
1144 01356 044056      ADB P033      GET "BREAD & ERROR" MASKS
1145 01357 163677R      LDA EQT25,I
1146 01360 013716R      AND B083
1147 01361 002003      SZA,RSS      DATA ERROR
1148 01362 027365R      JMP ++3
1149 01363 037730R      ISZ COMP
1150 01364 037730R      ISZ COMP
1151 01365 063730R      LDA COMP      GET COMPOSITE STATUS
1152 01366 110001      AND B,I      SAVE SELECTED BITS
1153 01367 001727      ALF,ALF      POSITION FOR LOGICAL
1154 01370 001700      ALF
1155 01371 070001      STA B
1156 01372 163677R      LDA EQT25,I
1157 01373 010074      AND RBYTS
1158 01374 030001      IOR B      FORM COMPOSITE
1159 01375 127341R      JMP BSTAT,I
1160*
1161*
1162 01376      BST1 EQU *
1163 01376 037341R      ISZ BSTAT      RETURN+2
1164 01377 027356R      JMP BST3
1165*
1166*
1167 01400 001402R STATX DEF ++2
1168 01401 030000      RSTAT OCT 30000      -1 READ VALUE
1169 01402 020000      OCT 20000      0 CONTROL VALUE
1170 01403 060000      OCT 60000      +1 WRITE VALUE
1171 01404 000016      OCT 16      -1 READ(TIMEOUT,LINE ERROR,0
1172 01405 000016      OCT 16      0 CONTROL(TIMEOUT,LINE ERRO
1173 01406 000015      OCT 15      +1 WRITE(TIMEOUT,LINE ERROR,
1174 01407      FSTAT EQU *
1175 01407 030000      OCT 30000      -1 READ VALUE
1176 01410 020000      OCT 20000      0 CONTROL VALUE
1177 01411 020000      OCT 20000      +1 WRITE VALUE

```

```

1178 01412 000016      OCT 16      -1 READ (TIMEOUT,LINE ERROR)
1179 01413 000016      OCT 16      0 CONTROL (TIMEOUT,LINE ERROR)
1180 01414 000015      OCT 15      +1 WRITE (TIMEOUT,LINE ERROR)
1181*****
1182*****
1183*****
1184*
1185*      CONFIGURE BOARD FOR RCV
1186*
1187*****
1188 01415      RCV      EQU *
1189 01415 000000      NOP
1190 01416 163667R      LDA EQT15,I      KNOCK
1191 01417 013737R      AND NSEND      TRANSMIT
1192 01420 173667R      STA EQT15,I      DOWN
1193 01421 033723R      IOR CDTX
1194 01422 017472R      JSB OTA
1195 01423 163661R      LDA EQT3,I
1196 01424 010072      AND M77$
1197 01425 017452R      JSB TTOR
1198 01426 163664R      LDA EQT6,I      RE EIVE CONT WORD
1199 01427 033722R      IOR CDCR      CD BIT ON
1200 01430 013741R      AND PAROF
1201 01431 017472R      JSB OTA
1202 01432 163673R      LDA EQT20,I      GET SYNC CHARACTER
1203 01433 033750R      IOR SYN      BIT 14 ON
1204 01434 017472R      JSB OTA
1205 01435 127415R      JMP RCV,I
1206*****
1207*
1208*      CONFIGURE BOARD FOR SEND
1209*
1210*****
1211 01436      SND      EQU *
1212 01436 000000      NOP
1213 01437 163661R      LDA EQT3,I      LOAD SELECT BITS
1214 01440 010072      AND M77$      MASK OFF BITS
1215 01441 002004      INA      MAKE IT XMIT
1216 01442 017452R      JSB TTOR      CONFIGURE
1217 01443 163667R      LDA EQT15,I      LOAD CONTROL WORD
1218 01444 033723R      IOR CDTX      CD BIT ON
1219 01445 033722R      IOR CDCR
1220 01446 173667R      STA EQT15,I
1221 01447 013741R      AND PAROF
1222 01450 017472R      JSB OTA      OUTPUT
1223 01451 127436R      JMP SND,I      RETURN
1224*
1225 01452      TTOR      EQU *
1226 01452 000000      NOP
1227 01453 073736R      STA LAST
1228 01454 043727R      ADA CLC1
1229 01455 073502R      STA 03
1230 01456 013724R      AND CHAR
1231 01457 073473R      STA 01
1232 01460 033725R      IOR CHAR1
1233 01461 073477R      STA 02

```



```

1234 01462 013726R      AND CHAR2
1235 01463 023715R      XOR B09$
1236 01464 073506R      STA 04
1237 01465 072553R      STA 05
1238 01466 033715R      IOR B09$
1239 01467 023716R      XOR B08$
1240 01470 073511R      STA 06
1241 01471 127452R      JMP TTOR,I
1242*
1243*****
1244 01472      OTA      EQU *
1245 01472 000000      NOP
1246 01473 102600 01    OTA SC
1247 01474 000000      NOP
1248 01475 127472R      JMP OTA,I
1249*
1250*****
1251 01476      STC      EQU *
1252 01476 000000      NOP
1253 01477 102700 02    STC SC
1254 01500 127476R      JMP STC,I
1255*
1256*
1257*****
1258 01501      CLC      EQU *
1259 01501 000000      NOP
1260 01502 106700 03    CLC SC
1261 01503 106700 07    CLC SC
1262 01504 127501R      JMP CLC,I
1263*
1264*
1265*****
1266 01505      STAT    EQU *
1267 01505 000000      NOP
1268 01506 102500 04    LIA SC
1269 01507 173677R      STA EQT25,I
1270 01510 000000      NOP
1271 01511 103100 06    CLF SC
1272 01512 127505R      JMP STAT,I
1273*
1274*
1275*
1276*****
1277 01513      SETIO   EQU *
1278*****
1279 01513 000000      NOP
1280 01514 073747R      STA SCODE
1281 01515 043727R      ADA CLC1
1282 01516 073502R      STA 03
1283 01517 002004      INA
1284 01520 073503R      STA 07
1285 01521 063747R      LDA SCODE
1286 01522 064300      LDB EQTB
1287 01523 047742R      ADB PLUS
1288 01524 164001      LDB B,I
1289 01525 005700      BLF

```

```

LOAD EGT ADDRESS
POINT TO TX CONT WORD
CONTENTS OF CONT WORD
MOVE BIT 12

```

```

1290 01526 004010 SLB TO POSITION 0
1291 01527 002004 INA WE ARE XMITTING
1292 01530 053736R CPA LAST ALREADY CONFIGURED
1293 01531 127513R JMP SETIO,I YES
1294 01532 073736R STA LAST NO
1295 01533 043727R ADA CLC1 FORM CLC INST
1296 01534 013724R AND CHAR FORM OTA INST
1297 01535 073473R STA 01
1298 01536 033725R IOR CHAR1 FORM STC INST
1299 01537 073477R STA 02
1300 01540 013726R AND CHAR2 FORM LIA INST
1301 01541 023715R XOR B09$ REMOVE CLEAR FLAG BIT
1302 01542 073506R STA 04
1303 01543 072553R STA 05
1304 01544 033715R IOR B09$
1305 01545 023716R XOR B08$
1306 01546 073511R STA 06
1307 01547 127513R JMP SETIO,I
1308*
1309*****
1310*
1311 01550 COMM EQU *
1312 01550 000000 NOP
1313 01551 050054 CPA P01$ IS IT RECEIVE
1314 01552 017556R JSB CLRTX YES
1315 01553 050055 CPA P02$ IS IT TRANSMIT
1316 01554 017632R JSB CLRX YES
1317 01555 026250R JMP CNTL1
1318 01556 CLRTX EQU *
1319 01556 000000 NOP
1320 01557 163661R LDA EQT3,I GET SELECT CODE
1321 01560 010072 AND M77$ CLEAR NON-BITS
1322 01561 002004 INA INCREMENT FOR XMIT
1323 01562 073736R STA LAST STORE SELECT CODE
1324 01563 043727R ADA CLC1 ADD CLC INSTRUCTION
1325 01564 073502R STA 03
1326 01565 017611R JSB ROUT CONFIGURE INST.
1327 01566 163667R LDA EQT15,I GET TX CONT WORD
1328 01567 033723R IOR CDTX
1329 01570 017472R JSB OTA OUTPUT CONT WORD
1330 01571 163667R LDA EQT15,I TX CONTROL WORD
1331 01572 013737R AND NSEND MASK OFF TX BIT
1332 01573 173667R STA EQT15,I STORE OFF TX WORD
1333 01574 003400 CCA
1334 01575 043736R ADA LAST
1335 01576 073736R STA LAST
1336 01577 003400 CCA SUBTRACT ONE
1337 01600 043502R ADA 03 FROM
1338 01601 073502R STA 03 SELECT CODE
1339 01602 017611R JSB ROUT CONFIGURE INST.
1340 01603 163664R LDA EQT6,I GET RX CONT WORD
1341 01604 033722R IOR CDCR ADD CD BIT
1342 01605 017472R JSB OTA OUTPUT CONT WORD
1343 01606 002400 CLA CLEAR SELECT CODE
1344 01607 073505R STA STAT
1345 01610 026300R JMP C2R

```

```

1346 01611 ROUT EQU *
1347 01611 000000 NOP
1348 01612 013724R AND CHAR MASK OUT OTA
1349 01613 073473R STA 01 STORE
1350 01614 033725R IOR CHAR1 MASK OUT STC
1351 01615 073477R STA 02 STORE
1352 01616 013726R AND CHAR2 MASK OUT LIA
1353 01617 023715R XOR B09$
1354 01620 073506R STA 04 STORE
1355 01621 072553R STA 05
1356 01622 033715R IOR B09$
1357 01623 023716R XOR B08$
1358 01624 073511R STA 06
1359 01625 017501R JSB CLC CLEAR CONT & CLR FLAG
1360 01626 163673R LDA EQT20,I GET SYNC CHAR
1361 01627 033750R IOR SYN BIT 14 ON
1362 01630 017472R JSB OTA OUTPUT SYNC CHAR
1363 01631 127611R JMP ROUT,I RETURN
1364 01632 000000 CLRX NOP
1365 01633 163661R LDA EQT3,I GET SELECT CODE
1366 01634 010072 AND M77$ CLEAR NON-BITS
1367 01635 073736R STA LAST STORE SELECT CODE
1368 01636 043727R ADA CLC1 ADD CLC INST.
1369 01637 073502R STA 03
1370 01640 017611R JSB ROUT CONFIGURE INST.
1371 01641 163664R LDA EQT6,I GET RX CONT WORD
1372 01642 017472R JSB OTA OUTPUT CONT WORD
1373 01643 063736R LDA LAST GET SELECT CODE
1374 01644 002004 INA ADD ONE
1375 01645 073736R STA LAST
1376 01646 043727R ADA CLC1 ADD CLC INSTRUCTION
1377 01647 073502R STA 03 FOR TX
1378 01650 017611R JSB ROUT CONFIGURE INST
1379 01651 163667R LDA EQT15,I GET TX CONT WORD
1380 01652 033723R IOR CDTX ADD CD BIT
1381 01653 033722R IOR COCR ADD TX BIT
1382 01654 173667R STA EQT15,I STORE OFF TX WORD
1383 01655 017472R JSB OTA OUTPUT CONT WORD
1384 01656 002400 CLA CLEAR SELECT
1385 01657 073505R STA STAT CODE
1386 01660 026270R JMP C2E RETURN
1387*****
1388* EQT LINKAGE TABLE
1389*
1390*****
1391 01661 000000 EQT3 NOP UNIT/SELECT CODE
1392 01662 000000 EQT4 NOP STATUS
1393 01663 000000 EQT5 NOP LINE STATE
1394 01664 000000 EQT6 NOP I/F CONTROL WORD
1395 01665 000000 EQT9 NOP CONWD
1396 01666 000000 EQT10 NOP PARAMETER 1
1397 01667 000000 EQT15 NOP TX CONTROL WORD
1398 01670 000000 EQT16 NOP TIMER FLAGS
1399 01671 000000 EQT17 NOP EXTENSION LINK
1400 01672 000000 EQT19 NOP BOARD PARAMETERS
1401 01673 000000 EQT20 NOP

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1402	01674	000000	EQT22	NOP	LREAD
1403	01675	000000	EQT23	NOP	LWRIT
1404	01676	000000	EQT24	NOP	LCNTL
1405	01677	000000	EQT25	NOP	I/F BOARD STATUS
1406	01700	000000	EQT27	NOP	DVR70 TIMER PROCESSOR ADDRESS
1407	01701	000000	EQT31	NOP	LOGICAL TIMER PROCESSOR ADDRESS
1408	01702	000000	EQT34	NOP	COUNTER FOR NULL O/P
1409	01703	000000	EQT35	NOP	SAVE FIRST CHAR. FOR O/P
1410	01704	000000	EQT14	NOP	TRANSMISSION LOG

1411*

1412* BASE PAGE CONSTANTS

1413*

1414	00053	#	EQU	53B
1415	00052	N01\$	EQU	#-1
1416	00051	N02\$	EQU	#-2
1417	00050	N03\$	EQU	#-3
1418	00047	N04\$	EQU	#-4
1419	00046	N05\$	EQU	#-5
1420	00045	N06\$	EQU	#-6
1421	00044	N07\$	EQU	#-7
1422	00043	N08\$	EQU	#-8
1423	00042	N09\$	EQU	#-9
1424	00041	N10\$	EQU	#-10
1425	00040	N64\$	EQU	#-11
1426	00053	P00\$	EQU	#
1427	00054	P01\$	EQU	#+1
1428	00055	P02\$	EQU	#+2
1429	00056	P03\$	EQU	#+3
1430	00057	P04\$	EQU	#+4
1431	00060	P05\$	EQU	#+5
1432	00061	P06\$	EQU	#+6
1433	00062	P07\$	EQU	#+7
1434	00063	P08\$	EQU	#+8
1435	00064	P09\$	EQU	#+9
1436	00065	P10\$	EQU	#+10
1437	00066	P17\$	EQU	#+11
1438	00067	P64\$	EQU	#+12
1439	00070	M17\$	EQU	#+13
1440	00071	M37\$	EQU	#+14
1441	00072	M77\$	EQU	#+15
1442	00073	M177\$	EQU	#+16
1443	00074	RBYT\$	EQU	#+17
1444	00075	LBYT\$	EQU	#+18
1445	00076	M377	EQU	#+19
1446	00077	M1777	EQU	#+20
1447	00074	NULL	EQU	RBYT\$

1448* BASE PAGE VARIABLES

1449	00202	##	EQU	202B
1450	00300	EQT8	EQU	300B
1451	00203	\$EQ1	EQU	##+1
1452	00205	\$EQ3	EQU	##+3
1453	00207	\$EQ5	EQU	##+5
1454	00210	\$EQ6	EQU	##+6
1455	00213	\$EQ9	EQU	##+9
1456	00214	\$EQ10	EQU	##+10
1457	00215	\$EQ11	EQU	##+11

OCT 377
OCT 177400
OCT 3777
OCT 177700

ADDRESS OF EQT ENTRY

1458	00220	SEQ14 EQU ##+14	
1459	00221	SEQ15 EQU ##+15	
1460	00222	SEQ16 EQU ##+16	
1461	00223	SEQ17 EQU ##+17	
1462	01705 001020	B94\$ OCT 1020	
1463	01706 140000	B54\$ OCT 140000	
1464	01707 100000	B15\$ OCT 100000	
1465	01710 040000	B14\$ OCT 40000	
1466	01711 020000	B13\$ OCT 20000	
1467	01712 010000	B12\$ OCT 10000	
1468	01713 004000	B11\$ OCT 4000	
1469	01714 002000	B10\$ OCT 2000	
1470	01715 001000	B09\$ OCT 1000	
1471	01716 000400	B08\$ OCT 400	
1472	01717 000040	M40\$ OCT 40	
1473	01720 000060	M60\$ OCT 60	
1474	01721 000160	M160\$ OCT 160	
1475	01713	SSSBB EQU B11\$	SECONDARY RECEIVE
1476	01711	SSCC EQU B13\$	DATA SET READY
1477	01712	SSCE EQU B12\$	RINGING
1478*			
1479	00055	ADPEN EQU P02\$	AWAITING OPEN
1480	01722 010000	CDCR OCT 10000	
1481	01723 020000	CDTX OCT 20000	
1482	01724 102677	CHAR OCT 102677	
1483	01725 001100	CHAR1 OCT 1100	
1484	01726 103577	CHAR2 OCT 103577	
1485	01727 107700	CLC1 CLC 0,C	
1486	00053	CLOSE EQU P00\$	CLOSED
1487	01730 000000	COMP NOP	
1488	01731 170000	DUM15 OCT 170000	
1489	01732 176777	ECHO OCT 176777	
1490	01733 000000	EXIT NOP	
1491	01734 000000	HOLD NOP	
1492	00056	IDLE EQU P03\$	IDLE
1493	01735 000103	INCD OCT 103	
1494	01736 000000	LAST NOP	
1495	00271	MPTFL EQU 271B	MEMORY PROTECT FLAG
1496	01737 167777	NSEND OCT 167777	
1497	01740 000177	PAD OCT 177	
1498	01741 173777	PAROF OCT 173777	PARITY OFF
1499	01742 000016	PLUS OCT 16	
1500	00061	PRCV1 EQU P06\$	PREPARE TO RCV#1(FLUSH WRITE)
1501	00062	PRCV2 EQU P07\$	PREPARE TO RCV#2(DROP CF)
1502	00063	PRCV3 EQU P08\$	PREPARE TO RCV#3(DELAY)
1503	00057	PSND EQU P04\$	PREPARE TO SEND
1504	00064	RECV EQU P09\$	RECEIVE
1505	00230	RQP3 EQU 230B	
1506	00231	RQP4 EQU 231B	
1507	01743 000000	RTX NOP	
1508	01744 000000	SAVA NOP	
1509	01745 000000	SAVB NOP	
1510	01746 000000	SAVEO NOP	
1511	01747 000000	SCODE NOP	
1512	00060	SEND EQU P05\$	SEND
1513	00065	SSYN EQU P10\$	SEND SYNC\$

PAGE 0029 #01 DVR70 12618 PHYSICAL LEVEL DRIVER 6/17/74

1514 01750 340000 SYN OCT 040000

1515*

01751 207777

01752 177716

1516

END

** NO ERRORS*

#	01414	01415	01416	01417	01418	01419	01420
	01421	01422	01423	01424	01425	01426	01427
	01428	01429	01430	01431	01432	01433	01434
	01435	01436	01437	01438	01439	01440	01441
	01442	01443	01444	01445	01446		
##	01449	01451	01452	01453	01454	01455	01456
	01457	01458	01459	01460	01461		
SEQ1	01451	00239	00265	00432			
*SEQ10	01456						
SEQ11	01457	00230					
SEQ14	01458	00117					
SEQ15	01459	00261	00407	00408	00412		
SEQ16	01460	00238					
SEQ17	01461	00218	00231	00358	00363		
SEQ3	01452	00427					
SEQ5	01453	00237	00405				
SEQ6	01454	00234	00245	00256	00259	00263	
SEQ9	01455	00219					
SPCOM	00037	00557	01020				
STIME	00037	00519	00701	01110	01120		
*B7777		00220	00275				
*D=50		00397					
A	00107	00338	00339	00433	00436	00476	00482
	00485	00488	00696	01038			
AOPEN	01479	00372	00386				
B	00108	00233	00241	00243	00246	00257	00828
	00829	01005	01137	01138	01152	01155	01158
	01288						
B086	01471	01146	01239	01305	01357		
B096	01470	01235	01238	01301	01304	01353	01356
*B106	01469						
B116	01468	01475					

B12\$	01467	01477					
B13\$	01466	00654	00655	01476			
*B14\$	01465						
B15\$	01464	00693	00820				
B54\$	01463	00260	00414				
B94\$	01462	00262					
BST1	01162	01139					
BST3	01143	01164					
BSTAT	01129	00874	00902	00949	01159	01163	
C,70	00114	00004	00118				
C0	00357	00277	00349				
C2	00368	00351					
C2B	00384	01345					
C2D	00376	00399					
C2E	00371	00388	01386				
C3	00395	00352					
C4	00402	00361	00396	00417			
CDCR	01480 01341	00752 01381	00891	00932	00983	01199	01219
CDTX	01481	00890	01193	01218	01328	01380	
CHAR	01482	01230	01296	01348			
CHAR1	01483	01232	01298	01350			
CHAR2	01484	01234	01300	01352			
CLC	01258 00771 01359	00411 00864	00416 00926	00555 01002	00730 01012	00735 01044	00769 01262
CLC1	01485	01228	01281	01295	01324	01368	01376
CLOSE	01486	00404	00651				
CLRTX	01318	01314					

CLRX	01364	01316					
CNTL1	00342	00336	01317				
CNTLT	00353	00337					
COMM	01311	00370					
COMP	01487	01131	01141	01142	01149	01150	01151
CONTL	00324	00284					
DONE	00999	00885	00907	00964			
*DONE1	01009						
DONE2	01041	01008					
DONED	01018	01054					
DQT	01100	00360	00554	01018	01114	01121	
DQT1	01111	01104					
DRCT1	00702	00682					
DRCT2	00690	00685					
DRCT3	00694	00689					
DRCTA	00713	00680	00703	00710	00775		
DRCTV	00678	00297	00314	00329	00711	00879	
DTIM	00526	00379	00520	00542	00617	00733	00790
DUM15	01488	00406					
ECHO	01489	00984					
EQT10	01396	00369	00467				
EQT14	01410	00469	01088				
EQT15	01397	00471	00689	01048	01050	01190	01192
	01217	01220	01327	01330	01332	01379	01382
EQT16	01398	00473	00509	00512	00638	00639	00683
	00695	01102	01106	01112	01116		
*EQT17	01399						
EQT19	01400	00478	00780	00921	01133		
EQT20	01401	00480	00803	00935	00975	00991	01202
	01360						

EQT22	01402	00295	00483	00963			
EQT23	01403	00312	00486	00906			
LQT24	01404	00327	00489	00877			
EQT25	01405 01156	00491 01269	00600	00953	00969	01136	01145
EQT27	01406	00493	00508	00513	00516	00517	01117
EQT3	01391 01320	00236 01365	00455	00457	00633	01195	01213
EQT31	01407	00495	00698	00699	01108		
EQT34	01408 00758	00375 00787	00398 00941	00497 00979	00549	00560	00574
EQT35	01409	00499	00777	00895			
EQT4	01392	00268	00270	00343	00459	00660	
EQT5	01393 00722 00827 00930	00373 00729 00876 00962	00387 00740 00884 00981	00461 00745 00894 00990	00530 00772 00905 01017	00552 00774 00915 01053	00650 00802 00925
EQT6	01394 01371	00463	00751	00931	00982	01198	01340
EQT9	01395	00274	00330	00465			
EQT8	01450	00453	00556	01003	01019	01286	
EXIT	01490	00216	01039	01080	01085		
PFSTAT	01174						
HOLD	01491	00957	00961				
I,70	00209	00004	00215				
I,70A	00264	00225					
I,70B	00229	00222					
I,70C	00253	00250					
IDLE	01492	00551	00883	01016	01052		
INCD	01493	00221					
LAST	01494 01367	01227 01373	01292 01375	01294	01323	01334	01335

LBYS	01444	00269			
LCHK	00648	00293	00310	00658	
LCHK1	00659	00652			
LMON	00938	00928			
LSIA	00863	00844	00847		
LSIB	00862	00845			
LSIC	00870	00846			
LSIC1	00882	00878			
LSID	00898	00849			
LSID1	00904				
LSIE	00911	00852			
LSIF	00920	00851			
LSIF1	00929	00741	00972	00977	
LSIG	00945	00853			
LSIG1	00956	00952	00952		
LSIH	00968	00852			
LSII	00888	00848			
LSIK	00968	00854			
LSIT	00843	00129	00628		
LSTA	00856	00831			
LSTB	00872	00832	00833	00834	
LSTC	00947	00837	00838	00839	00840
LSTD	00933	00835	00636	00841	
LSTT	00833	00826			
LSWCH	00827	00132	00609		
LTIM	00817	00527	00815	01092	
LTIMA	00815	00697			
0N1608	01474				

M17S	01439	00258	00278				
PM177S	01442						
PM1777	01446						
PM37S	01440						
PM3777	01445						
M40S	01472	00251					
M60S	01473	00248					
M77S	01441	00333	00634	01196	01214	01321	01366
MPTFL	01495	01075					
N01S	01415 01042	00252 01109	00518 01118	00573	00700	00731	01014
N02S	01416	00378	00539	00788			
N03S	01417	01037					
N04S	01418	00334					
N05S	01419						
N06S	01420						
N07S	01421						
N08S	01422	00757	00786	00940	00978		
N09S	01423						
N10S	01424	00374					
N64S	01425	00615					
NSEND	01496	01049	01191	01331			
NULL	01447						
01	01246	01231	01297	01349			
02	01253	01233	01299	01351			
03	01260 01045 01369	01009 01047 01377	01011 01229	01013 01282	01015 01325	01041 01337	01043 01338
04	01268	01236	01302	01354			

05	00599	01237	01303	01355			
06	01271	01240	01306	01358			
07	01261	01284					
OTA	01244	00316	00413	00415	00754	00793	00805
	00692	00896	00913	00934	00937	00985	00993
	01051	01194	01201	01204	01222	01248	01329
	01342	01362	01372	01383			
P.700	00120	00005					
P.701	00134	00025					
P.702	00144	00005					
P.703	00154	00005					
P.704	00166	00006					
P.705	00176	00006					
P.706	00186	00006					
P.707	00196	00006					
P005	01426	01486					
P015	01427	00226	00279	00511	01313		
P025	01428	00281	00454	00481	00492	00604	00823
	01315	01479					
P035	01429	00224	00276	00283	00464	00496	01144
	01492						
P045	01430	00242	00301	00468	00494	01140	01503
P055	01431	01512					
P065	01432	01135	01500				
P075	01433	00240	00430	01501			
P085	01434	00434	00825	01502			
P095	01435	01504					
P105	01436	01513					
*P175	01437						
*P645	01438						
PAD	01497	00012					

PARDF	01498	00753	00933	01200	01221		
PCOMM	00127 00233	00141	00151	00161	00173	00183	00193
PLUS	01499	01004	01287				
PRCV1	01530	00744					
PRCV2	01531	00914					
PRCV3	01532	00728	00739	00924	00929		
PSND	01533	00531	00773	00989			
RBYTS	01443 01447	00315	00776	00804	00974	00992	01157
RCV	01188	00734	00927	01205			
READ	00292	00280					
READ1	00380 00661	00296	00313	00328	00344	00350	00364
READC	00297	00966					
RECV	01534	00723	00980				
RERC	00786	00782					
ROUT	01346	01326	01339	01363	01370	01378	
*RQP3	01525						
*RQP4	01536						
RSTAT	01168	00565	00566				
RTRN	01062 00739 00865 00904	00228 00736 00881 01021	00286 00747 00897	00298 00785 00917	00303 00791 00942	00318 00795 00955	00380 00857 00986
RTRN0	01091	01068					
RTRN1	01087	01066					
RTRN2	01069	01090					
RTRN3	01081	01077					
RTX	01537	00213	00605	00824	01035	01064	
SSCC	01476	00601					

*SSCE	01477						
*SSSBB	01475						
SAVA	01508	00214	00227	00285	00302	01028	01074
SAVB	01509	01029	01078	01082	01089		
SAVE	01025 00189	00123 00199	00137 01036	00147 01040	00157	00169	00179
SAVEC	01510	01033	01070				
SC	00109 01271	00599	01246	01253	01260	01261	01268
SCOPE	01511	00217	00272	00409	00435	01280	01285
SEND	01512	00725	00778	00893			
SETID	01277	00127	00273	00410	00635	01293	01307
SETQ	00451 00191	00125 00201	00139 00266	00149 00456	00159 00500	00171 00632	00181
*SETQ2	00475						
SETU	00425	00271	00437				
SND	01211	00770	01223				
SRD1	00738	00724					
SRD3	00743	00726					
SRD4	00727	00923					
SREAD	00720	00705					
SSYN	01513	00801					
STAT	01266 01385	00128	00529	00653	00822	01272	01344
STATX	01167	01132					
STC	01251 00880	00317 00916	00746 00939	00756 01254	00784	00794	00807
STIN	00750	00586	00759	00960			
STOUT	00799	00570	00808				
SWRIT	00767	00707					

SWRT1	00792	00779					
SYN	01514	00936	01203	01361			
SYNYE	00978	00976					
TD1	00524	00523	00544				
TD1A	00523	00377	00541	00789			
TD1B	00546	00535					
TD1C	00543	00558	00571				
TD1D	00564	00532					
TD1E	00572	00568					
TD1F	00540	00575					
TD1G	00569	00576					
TD1H	00553	00537	00562				
TD1I	00538	00550	00561				
TD1K	00559	00548					
TD2	00581	00580	00588				
TD2A	00580	00732					
TD3	00594	00593	00606	00611			
TD3A	00593	00616					
TD3B	00610	00603					
TIMOF	00629	00528	00585	00597	00640	00821	
TMOF1	00642	00631	00636				
TMON	00614	00598	00618	00755	00783	00806	00938
TTOR	01225	01197	01216	01241			
UEQT	00440 00190	00124 00200	00138	00148	00158	00170	00180
USC	00441 00192	00126 00202	00140	00150	00160	00172	00182
UTBL	00439	00431					
WRITC	00314	00908					

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CROSS-REFERENCE SYMBOL TABLE

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